REMARKS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 1-7 are pending in the present application. Claims 1-7 are maintained by the present response.

In the outstanding Office Action, Claims 1, 2, and 7 were rejected under 35 U.S.C. § 103(a) as unpatentable over Kajihara et al. (U.S. Patent No. 5,559,583, herein "Kajihara") and Dai et al. (U.S. Patent No. 5,896,071, herein "Dai"), and Claims 3-6 were indicated as allowable.

Applicants thank the Examiner for the indication of allowable subject matter.

Claims 1, 2, and 7 were rejected under 35 U.S.C. § 103(a) as unpatentable over Kajihara and Dai. That rejection is respectfully traversed.

Briefly recapitulating, independent Claim 1 is directed to a surface acoustic wave device including a plurality of transducers formed on a piezoelectric substrate including a plurality of regions. Each of the regions has a pair of comb electrodes whose surface wave propagation directions are opposite to each other, and at least two of the transducers are connected in parallel to each other. Further, resonant modes of the transducers are coupled.

With this configuration, the surface acoustic wave device achieves a steep skirt characteristic (out-of-band shoulder characteristic) with a low loss and within a broad band.[1]

In a non-limiting example, Figure 1 shows the surface acoustic wave device 10 having a plurality of transducers 5, 9, 13, and 16 including a plurality of regions 3, 4, 7, 8, 11, 12, 14 and 15. Each of the regions 3, 4, 7, 8, 11, 12, 14, and 15 has a pair of comb electrodes shown in Figure 2 and the surface wave propagation directions of the pair of comb electrodes are opposite to each other. At least two of the transducers 5 and 13 in Figure 1 are connected in

[1] Specification, page 6, lines 13-25.

parallel to each other and their resonant modes are coupled as shown in another non-limiting example in Figure 5.

According to Figure 5, a surface acoustic wave filter A has three resonant peaks Fl1, Fc1, and Fu1, a surface acoustic wave filter B has three resonant peaks Fl2, Fc2, and Fu2, each filter has an RSPUDT electrode structure, and the filters are configured to couple the total six resonant peaks to realize a filter of a broad band.

Turning to the applied art, Kajihara discloses a surface acoustic wave filter including two two-port surface acoustic wave resonators which are operated in three different longitudinal modes and arranged in parallel to each other.[2] The resonance peaks of high and midrange frequency passsbands of one resonator are brought into coincidence with those of low and midrange frequency passbands of the other resonator.[3] However, Kajihara does not teach or suggest a surface acoustic wave device using an RSPUDT structure. In other words, Kajihara discloses resonators that are connected in parallel and in opposite phase using triple-mode resonances but the resonators differ from the claimed device in that the surface acoustic wave resonators do not have an RSPUDT structure. In fact, Kajihara uses the two-port surface acoustic wave resonators with a grating reflector and not with the RSPUDT structure required by Claim 1.

Further, since the frequencies of in-phase resonant modes of two resonators in Kajihara are conformed to each other, only five resonant peaks are used as a total filter, contrary to the device of Claim 1 in which the resonant frequencies of the two RSPUDT filters do not conform to each other, and therefore, six resonant modes are used as a total filter.

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[2] Kajihara, column 4, lines 51-64.
[3] Id., column 6, lines 23-37.

Furthermore, the RSPUDTs of Claim 1 are connected in opposite phase to couple resonant responses of the RSPUDTs or responses of internal reflection of interdigital transducers (IDTs). To the contrary, Kajihara uses a grating reflector as a cavity to generate a resonance response. Thus, the source from which the resonant response is generated differs in Kajihara from that of the claimed device.

Dai discloses that two RSPUDT filters in opposite phase are arranged in parallel with each other. However, these opposite-phase filters are arranged in order to obtain a balanced input (output), and unlike the device of Claim1, no resonant modes are coupled. In particular, Dai shows an example of an unbalanced input and a balanced output or a balanced input and an unbalanced output in Figures 9 and 10.[4] However, Dai does not teach or suggest any structure for coupling resonance modes.

Accordingly, it is respectfully submitted that independent Claim 1 and each of the claims depending therefrom patentably distinguish over Kajihara and Dai.

[4] Dai, column 7, line 11, to column 8, line 18.

Consequently, in light of the above discussion, the present application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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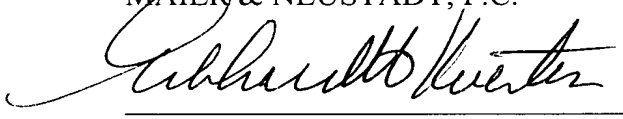

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